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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/347,560	07/06/1999	JOHN ERIK HERSHEY	RD-24.997	4031

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EXAMINER

LIU, SHUWANG

ART UNIT PAPER NUMBER

2634

DATE MAILED: 03/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/347,560

Applicant(s)

HERSHEY ET AL.

Examiner

Shuwang Liu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 27 December 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed *on 12/27/02 have been fully considered but they are not persuasive. The Examiner has thoroughly reviewed Applicant's arguments but firmly believes that the cited reference reasonably and properly meet the claimed limitation as rejected.

(A) Response to the argument in Section 102 (a) Rejection:

Applicant's arguments are moot in view of the following 103 rejections set forth in this office action because of the amendment.

(B) Response to the argument in Section 103 Rejection:

(1) Applicant's argument – The office action has not set forth a proper motivation for combining the teachings of Le Roy and Hershey (see page 5 of the amendment).

Examiner's response – In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a prima facie case of obviousness. See *In re Rilckaert*, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993) and *in re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). A prima facie case of obviousness is established by presenting evidence that the reference teachings would appear to have suggested the claimed subject matter to one of ordinary skill in the art. See *In re Bell*, 991 F.2d 781, 783, 26 USPQ2d 1529, 1531 (Fed. Cir. 1993); *In re Fritch*, 972 F.2d 1260, 1266 n.14, 23 USPQ2d 1780, 1783-84 n.14 (Fed. Cir. 1992); *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed.

Cir. 1988); *Ashland Oil, Inc. v. Delta Resins & Refractories Inc.*, 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985).

The Examiner points to that Le Roy discloses an encoder and a method for encoding a digital baseband signal in a spread spectrum communication system, said encoder comprising:

an exclusive "or" logic unit (12) having a first input for receiving said digital baseband signal (b_k);

a one bit delay unit (14) having an input coupled to the output of said exclusive "or" logic unit, said one bit delay unit having an output coupled to a second input of said exclusive "or" logic unit;

the output of said exclusive "or" logic unit providing an encoded digital baseband signal (d_k);

said encoded digital baseband signal coupled to a modulator (18) so as to modulate spread spectrum carrier signal (column 2, line 53-column 6, line 21 and column 7, lines 30-59).

The Applicant does not rebut any of these assertions. The Examiner further relies on the benefits of a GHM system with less sensitive to phase distortion introduced by non-linear transformers and resulting in a less complex system by using the conventional DPSK (see column 4, lines 40- 43, Hershey et al.), to conclude that one of ordinary skill in the art would have been motivated to combine the references.

When an obviousness determination relies on the combination of two or more references, there must be some suggestion or motivation to combine the references.

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See *In re Rouffet*, 149 F.3d 1350, 1355, 47 USPQ2d 1453, 1456 (Fed. Cir. 1998). The suggestion to combine may be found in explicit or implicit teachings within the references themselves, from the ordinary knowledge of those skilled in the art, or from the nature of the problem to be solved. See *id.* at 1357, 47 USPQ2d at 1458. Moreover, as long as some motivation or suggestion to combine the references is provided by the prior art taken as a whole, the law does not require that the references be combined for the reasons contemplated by the inventor. See *In re Dillon*, 919 F.2d 688, 693, 16 USPQ2d 1897, 1901 (Fed. Cir. 1990)(en banc), cert. denied, 500 U.S. 904 (1991) and *In re Beattie*, 974 F.2d 1309, 1312, 24 USPQ2d 1040, 1042 (Fed. Cir. 1992).

Le Roy teaches a conventional DPSK encoding method as recited in claims. Hershey et al. teaches that a typical GHM coding scheme binary data is coded according to a differential phase shift keying (DPSK) method (column 4, lines 32-43). Thus, as stated by the Examiner, the advantages described by Hershey would have motivated one of ordinary skill in the art to employ DPSK encoding method in the GHM system.

(2) Applicant's argument – None of the references teach or suggest a geometric harmonic modulation communication system that facilitates identification of transmission errors which result from the time varying transfer function due to transmission through distribution transformers.

Examiner's response – In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "a geometric harmonic modulation communication system

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that facilitates identification of transmission errors which result from the time varying transfer function due to transmission through distribution transformers") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 6-8 are rejected under 35 U.S.C. 102(a) as being unpatentable over Le Roy in view of Hershey et al. (US 5,844,94).

As shown in figures 1 and 3, and Le Roy discloses an encoder and a method for encoding a digital baseband signal in a spread spectrum communication system, said encoder comprising:

(1) regarding claims 1 and 6:

an exclusive "or" logic unit (12) having a first input for receiving said digital baseband signal (b_k);

a one bit delay unit (14) having an input coupled to the output of said exclusive "or" logic unit, said one bit delay unit having an output coupled to a second input of said exclusive "or" logic unit;

the output of said exclusive "or" logic unit providing an encoded digital baseband signal (d_k);

said encoded digital baseband signal coupled to a modulator (18) so as to modulate spread spectrum carrier signal (column 2, line 53-column 6, line 21 and column 7, lines 30-59).

(2) regarding claim 7:

further comprising the step of utilizing the encoded digital baseband output to modulate a spread spectrum carrier signal (generated by 16).

(3) regarding claim 8:

wherein the output of said "or" unit is delayed for one bit period (column 2, lines 19-23 and lines 58-64).

Le Roy discloses all of the subject matter except the system is a geometric harmonic modulation communication system.

Hershey et al. teaches that a typical GHM coding scheme binary data is coded according to a differential phase shift keying (DPSK) method (column 4, lines 32-43).

One skilled in the art would have clearly recognized that the DPSK is a conventional method used in the GHM system whereby the GHM carrier is inverted or not inverted during a bit duration interval according to the binary state of the data so as the GHM receiver need not correct for frequency selective phase rotation. It would be

desirable to have a GHM system with less sensitive to phase distortion introduced by non-linear transformers and resulting in a less complex system. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate DPSK coding scheme of Le Roy in the GHM system in order to allow the receiver need not correct for frequency selective phase rotation. In so doing, the GHM system is less sensitive to phase distortion introduced by non-linear transformers and resulting in a less complex system.

4. Claims 3-4, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Le Roy in view of Hershey et al. (US 5,844,949).

As shown in figure 2, Le Roy discloses a decoder and a method for decoding a digital baseband signal, comprising:

(1) regarding claims 3 and 10:

a one bit delay unit (22) having an input coupled to a filter (20) (column 2, lines 19-23 and lines 58-64);

a multiplier (24) having a first input coupled to the output of the filter, and a second input coupled to the output of said one bit delay unit;

a summer (26) coupled to the output of said multiplier (24);

a logic level (28) determiner coupled to the output of said multiplier said logic level determiner to provide a decoded digital baseband signal.

(2) regarding claim 4:

an encoder having:

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an exclusive "or" logic unit (12) having a first input for receiving said digital baseband signal (b_k);

a one bit delay unit (14) having an input coupled to the output of said exclusive "or" logic unit, said one bit delay unit having an output coupled to a second input of said exclusive "or" logic unit;

the output of said exclusive "or" logic unit providing an encoded digital baseband signal (d_k);

said encoded digital baseband signal coupled to a modulator (18) so as to modulate spread spectrum carrier signal (column 2, line 53-column 6, line 21 and column 7, lines 30-59).

a decoder having:

a one bit delay unit (22) having an input coupled to a filter (20);

a multiplier (24) having a first input coupled to the output of the filter, and a second input coupled to the output of said one bit delay unit;

a summer (26) coupled to the output of said multiplier (24);

a logic level (28) determiner coupled to the output of said multiplier said logic level determiner to provide a decoded digital baseband signal.

Le Roy discloses all of the subject matter as described above except for specifically teaching (1) for a geometric harmonic modulation spread spectrum communication system and (2) an output of the delay unit coupled to the output geometric harmonic modulation Fourier transform unit, that is, the input of the decoder coupled to the output geometric harmonic modulation Fourier transform unit.

Hershey et al. teaches that (1) a typical GHM coding scheme binary data is coded according to a differential phase shift keying (DPSK) method (column 4, lines 32-43) and (2) the input of the decoder (33 in figure 3) coupled to the output geometric harmonic modulation Fourier transform unit

One skilled in the art would have clearly recognized that the DPSK is a conventional method used in the GHM system whereby the GHM carrier is inverted or not inverted during a bit duration interval according to the binary state of the data so as the GHM receiver need not correct for frequency selective phase rotation. It would be desirable to have a GHM system with less sensitive to phase distortion introduced by non-linear transformers and resulting in a less complex system. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate DPSK coding scheme of Le Roy in the GHM system in order to allow the receiver need not correct for frequency selective phase rotation. In so doing, the GHM system is less sensitive to phase distortion introduced by non-linear transformers and resulting in a less complex system. Furthermore, it is well known that A Fourier Transform (FFT) module is needed in the receiver to perform a Fourier transform on the samples obtained at time t to result in Fourier coefficients in order to recover the message bits from the received signal. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate FFT, as taught by Hershey et al. coupled the input of the decoder of Le Roy in order to recover the message bits from the received signal.

(3) regarding claims 5 and 9:

Le Roy discloses all of the subject matter as described above (regarding claims 3 and 6-7) except the modulated spread spectrum carrier signal is coupled to a power line.

Hershey et al. teaches that the modulated spread spectrum carrier signal is coupled to a power line (abstract).

one skilled in the art would have clearly recognized that power lines exist in almost all the buildings. It is desirable to use the existing the power line in the buildings to provide data transmission in order to reduce the cost for wiring another new line as the communication channel. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use power line as taught by Hershey et al. in the communication system of Le Roy because such feature provides the communication channel at lower cost.

(4) regarding claim 11:

It is inherent in the DPSK encoder that the logic circuit 28 is declaring a logical zero when said product is greater than or equal to zero, and otherwise declaring a logical one.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shuwang Liu whose telephone number is (703) 308-9556.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin, can be reached at (703) 305-4714.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

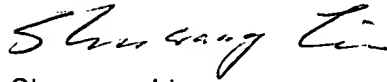
or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

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Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.



Shuwang Liu
Primary Examiner

February 27, 2003